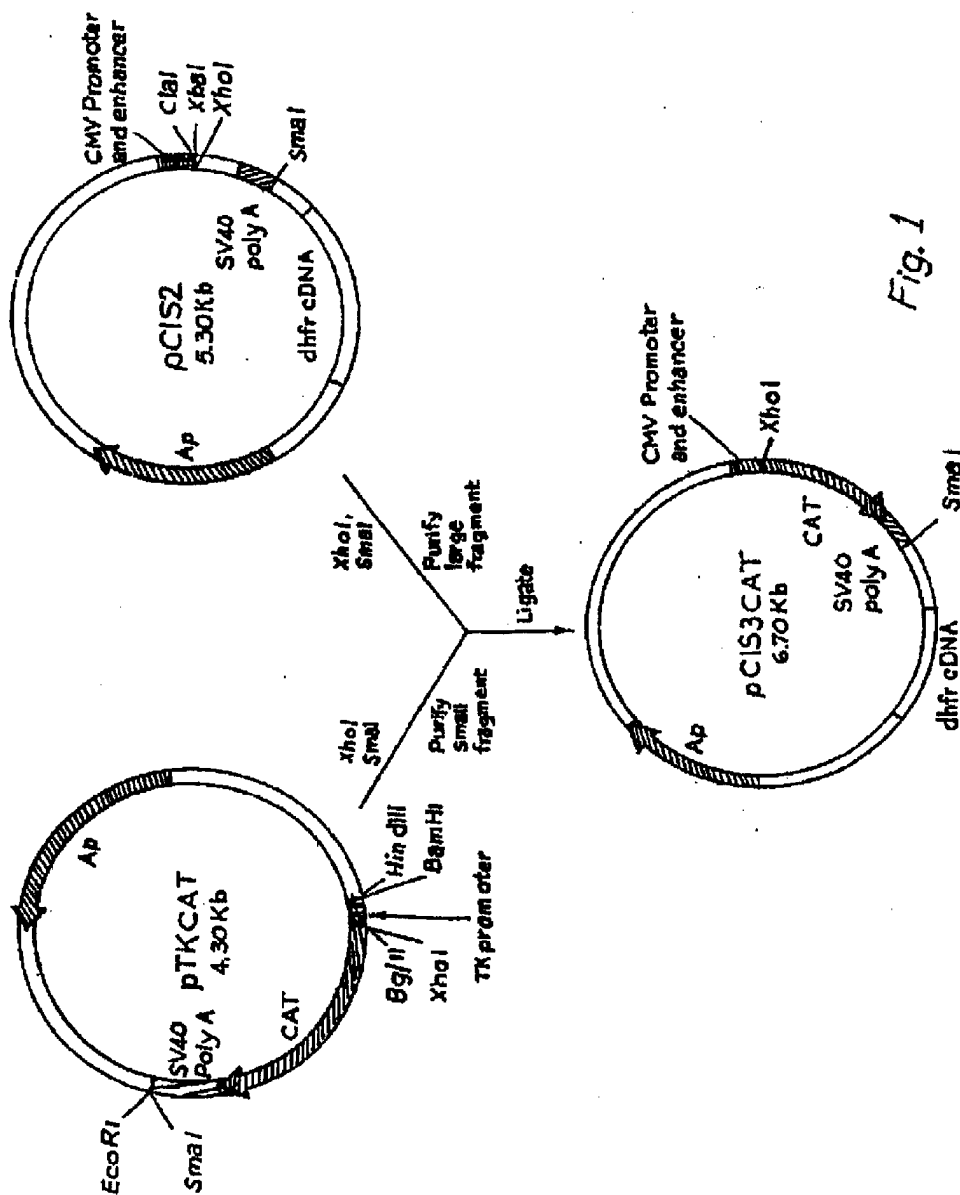


U.S. Patent

Nov. 4, 1997

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5,683,866

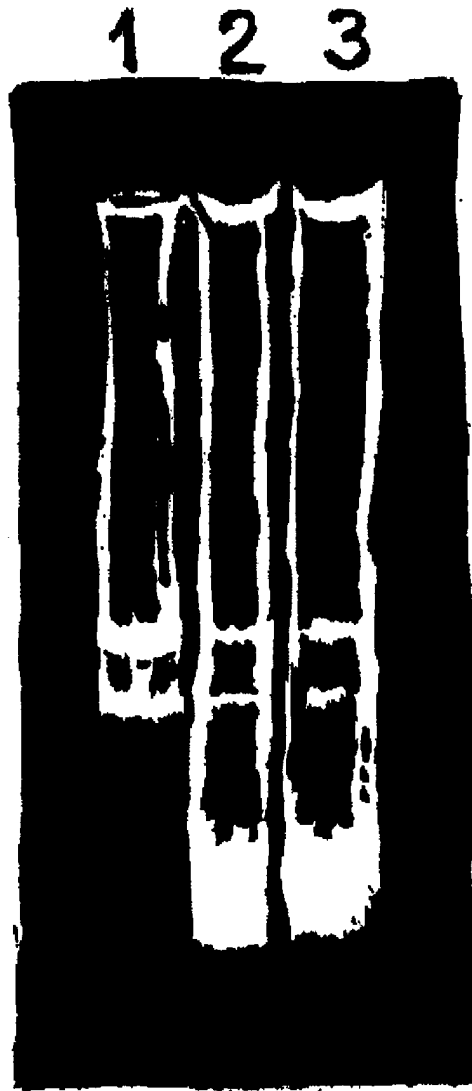


**U.S. Patent**

**Nov. 4, 1997**

**Sheet 2 of 7**

**5,683,866**



*Fig. 2*

U.S. Patent

Nov. 4, 1997

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5,683,866

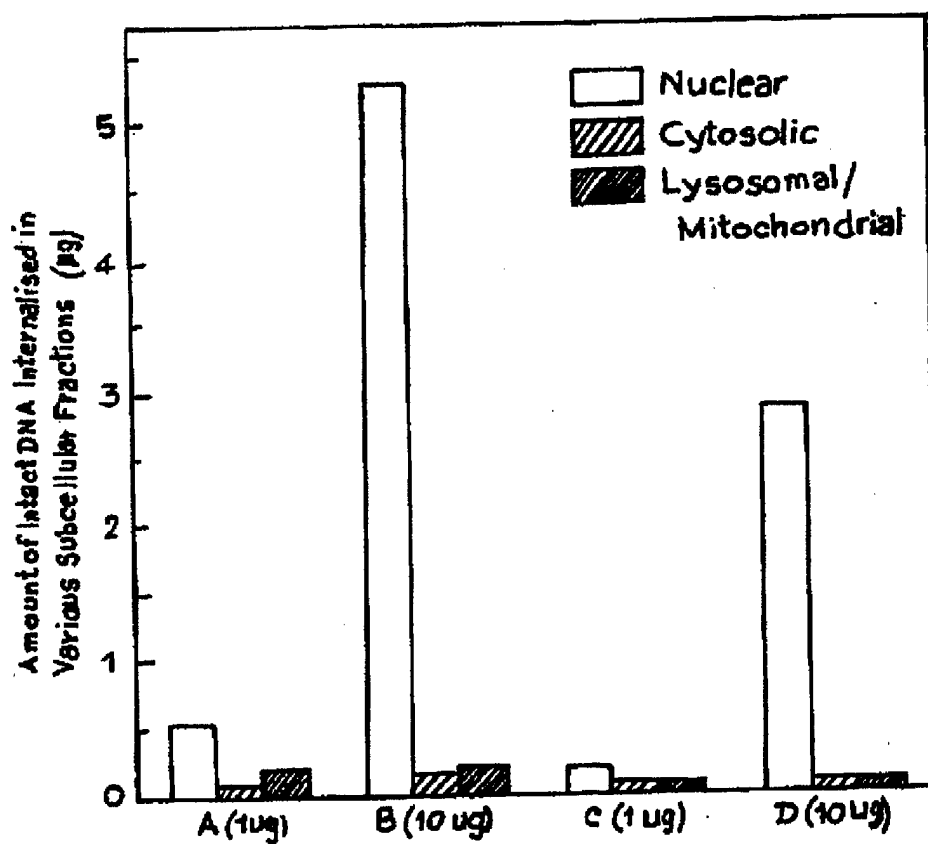


Fig. 3a

U.S. Patent

Nov. 4, 1997

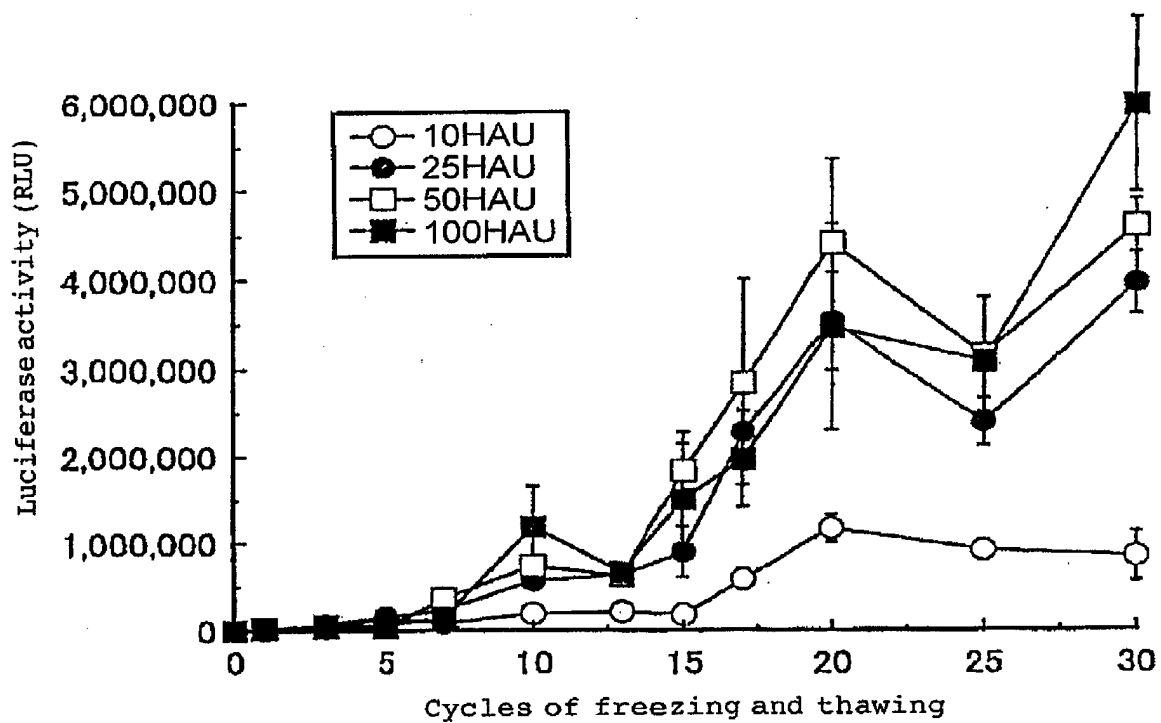
Sheet 4 of 7

5,683,866

1	2	3	4	5	6	7	8	9	10	11	12	13
11 12 13			11 12 13									11 12 13

Fig. 3b

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 1 of 29



**Fig. 1**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 2 of 29

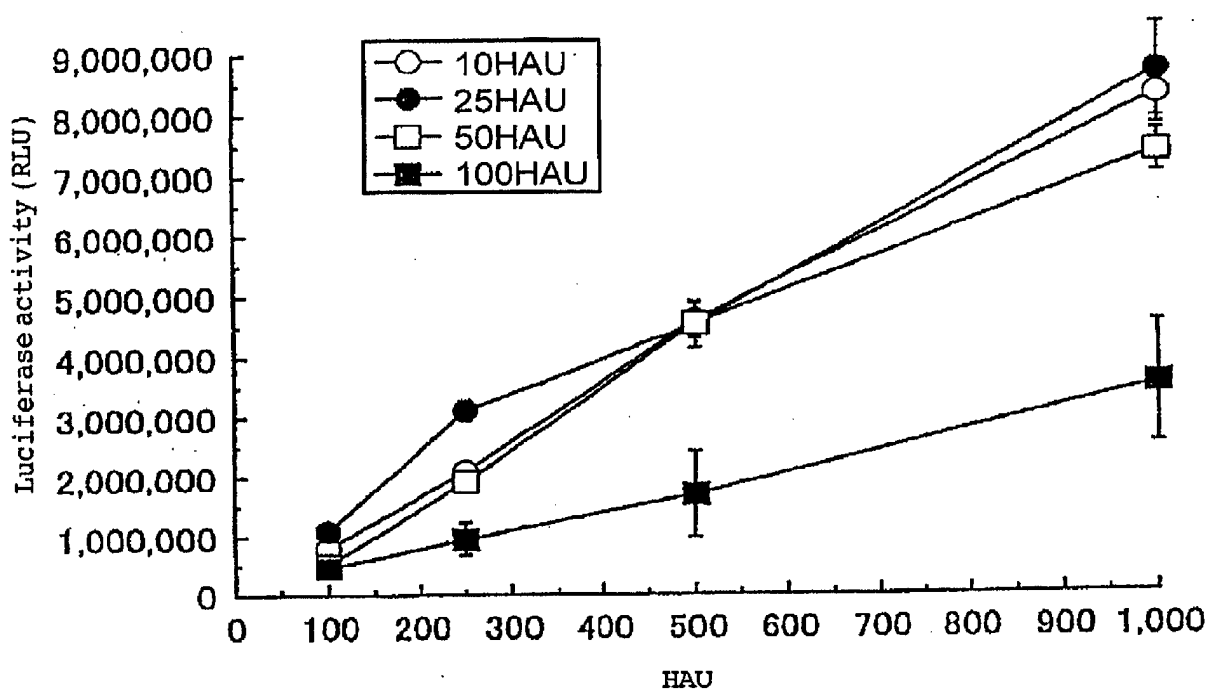
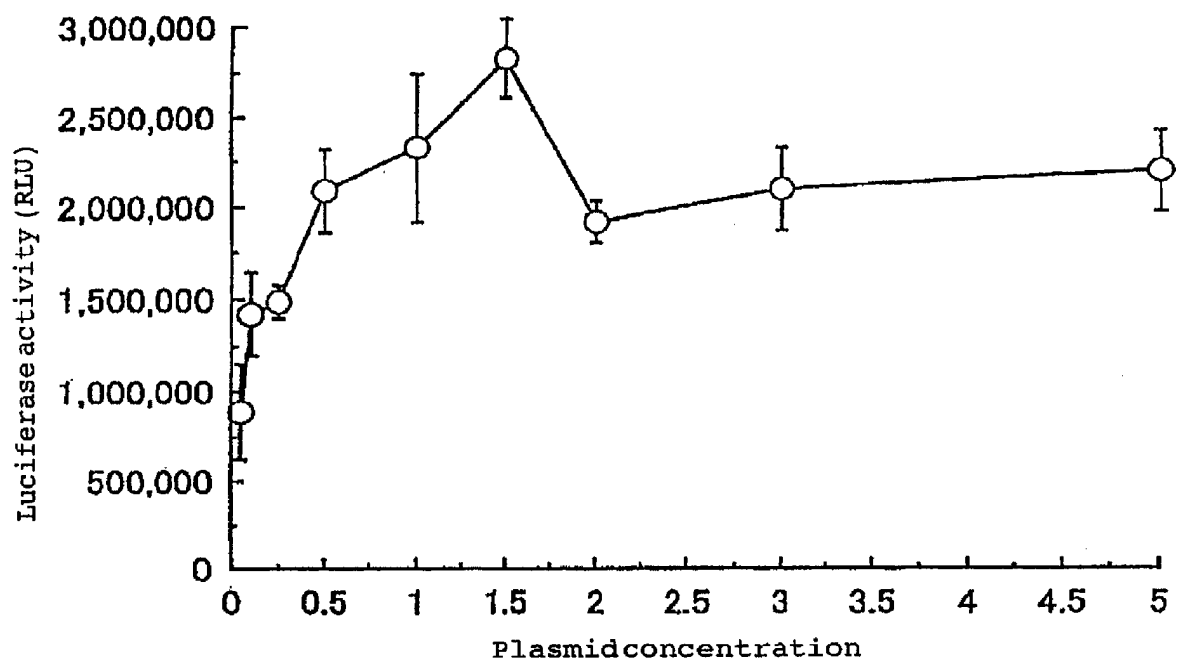


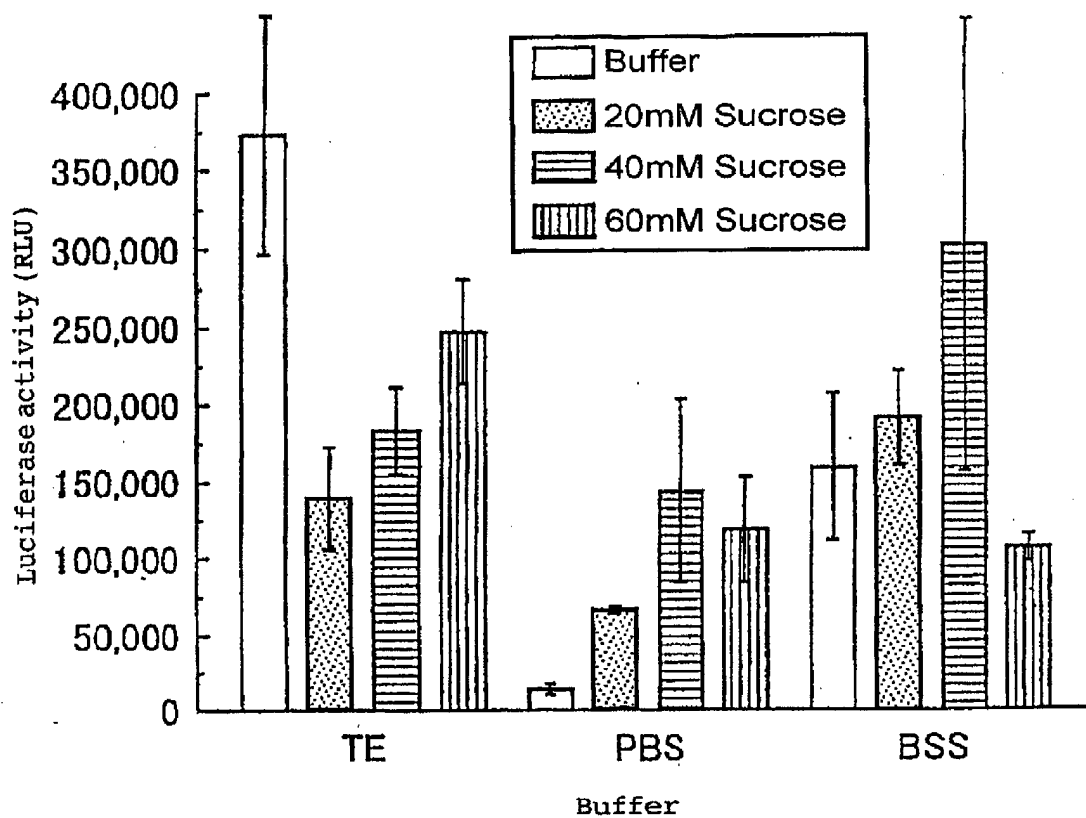
Fig. 2

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 3 of 29



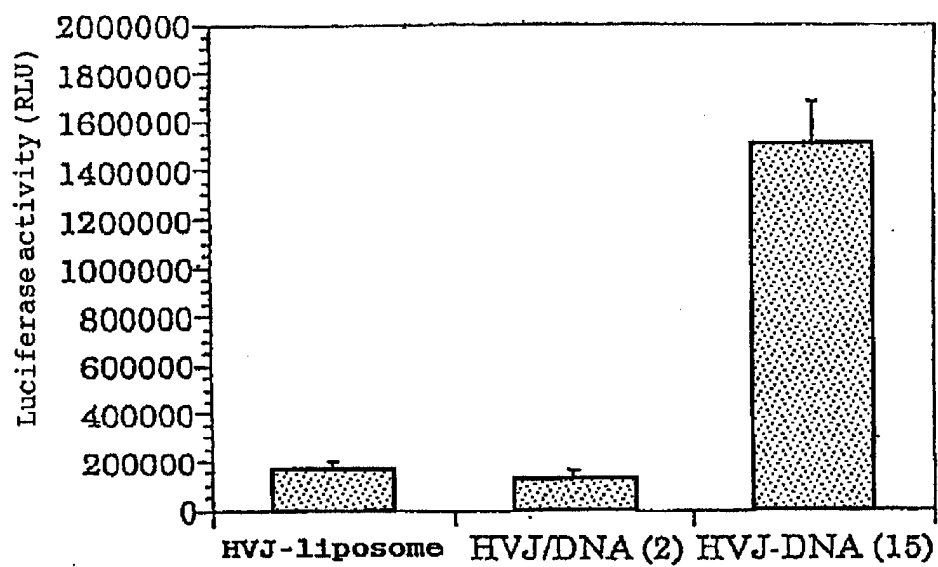
**Fig. 3**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 4 of 29

**Fig. 4**

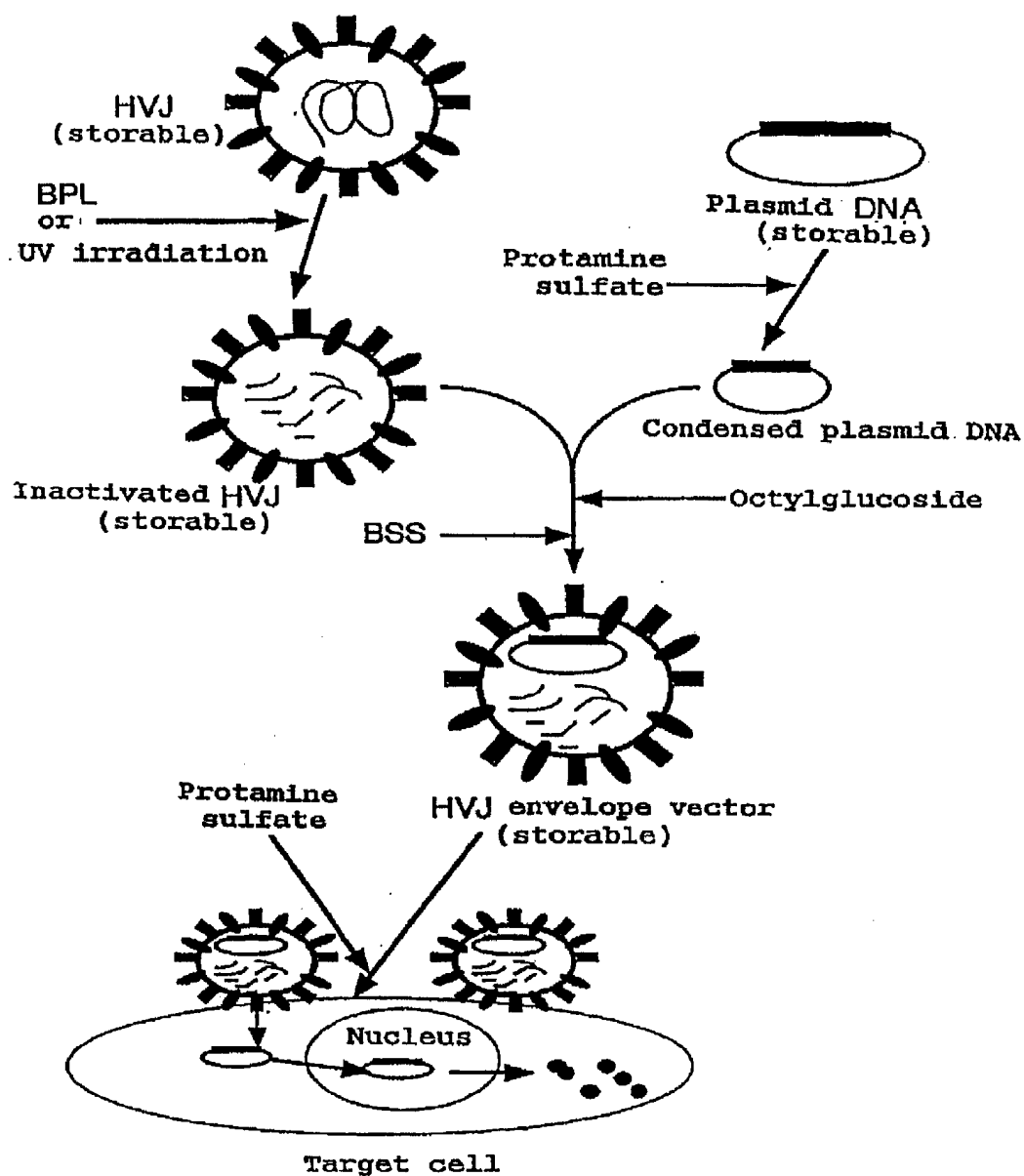


Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 5 of 29

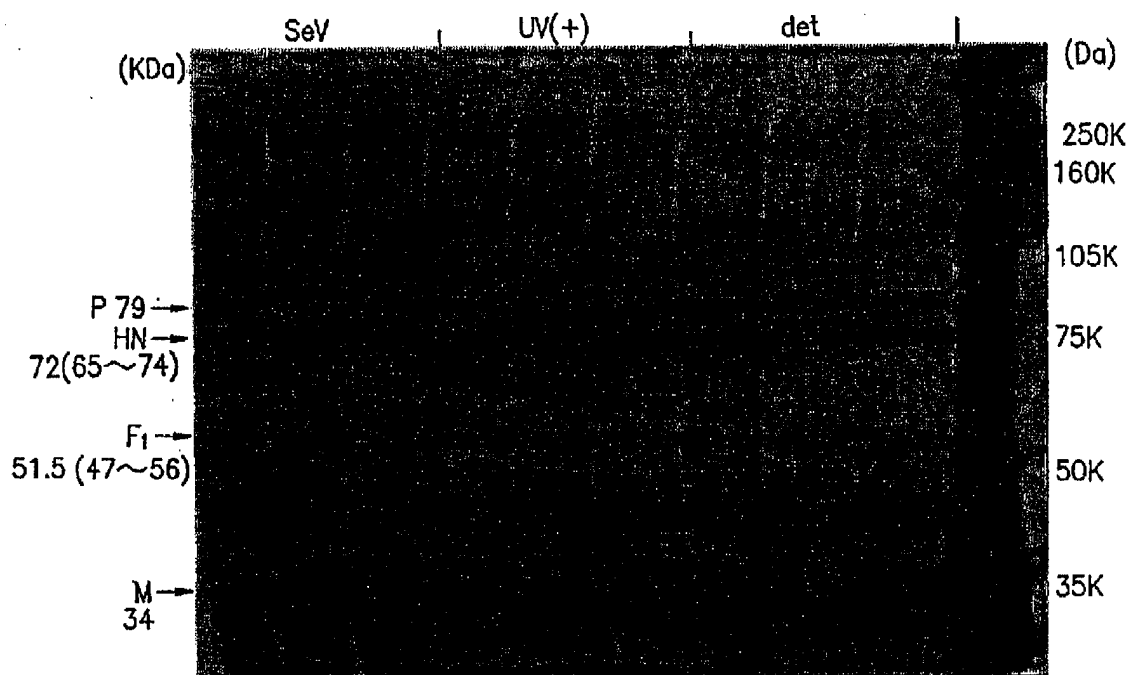


**Fig. 5**

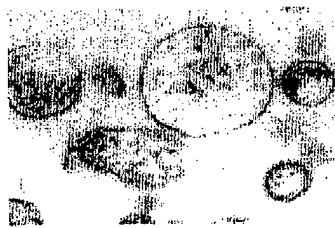
Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 6 of 29

**Fig. 6**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 7 of 29

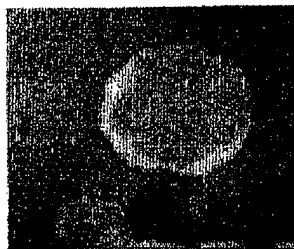
**Fig. 7**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 8 of 29



— 100nm

**Fig. 8A**



**Fig. 8B**



**Fig. 8C**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 9 of 29

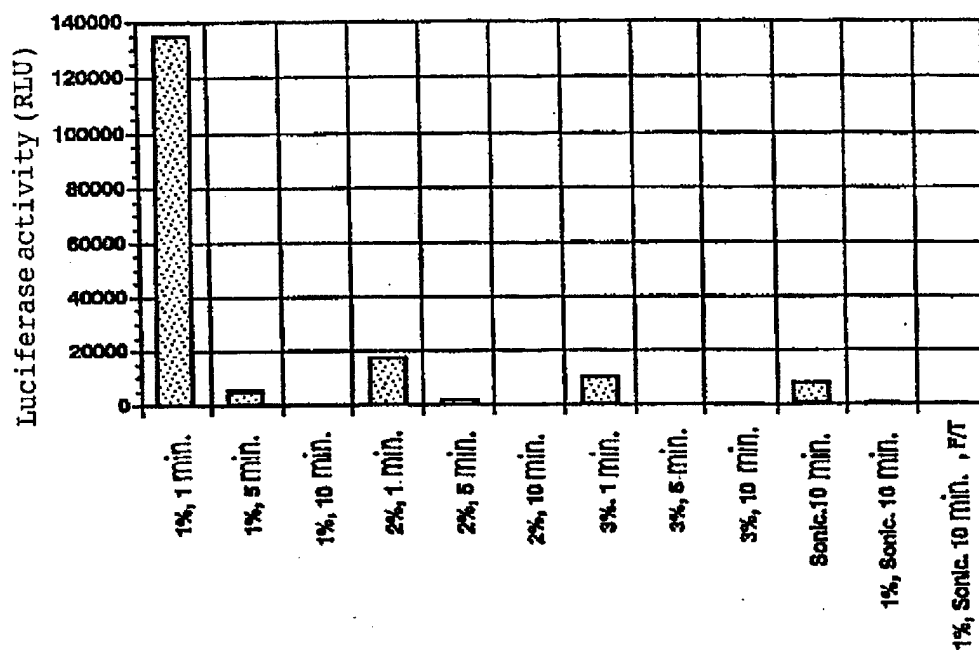


Fig. 9A

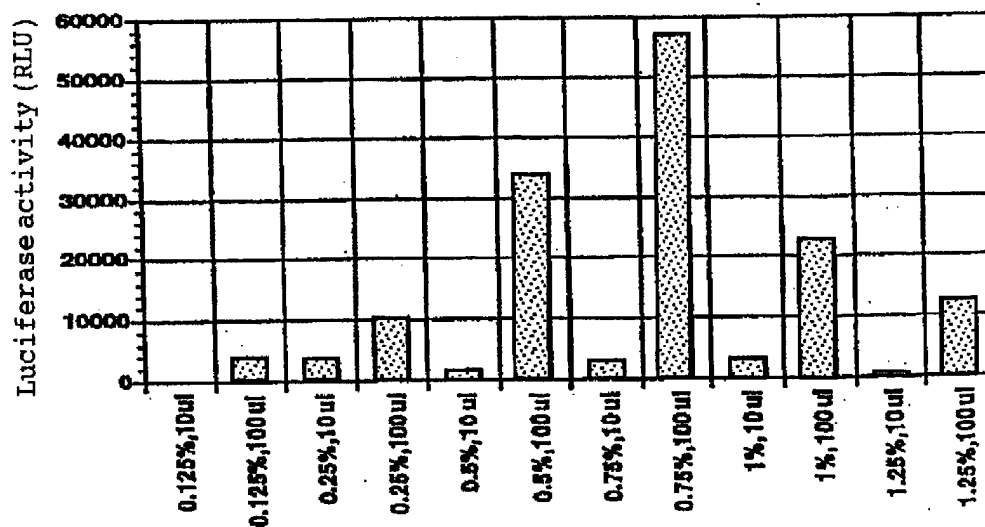


Fig. 9B

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 10 of 29

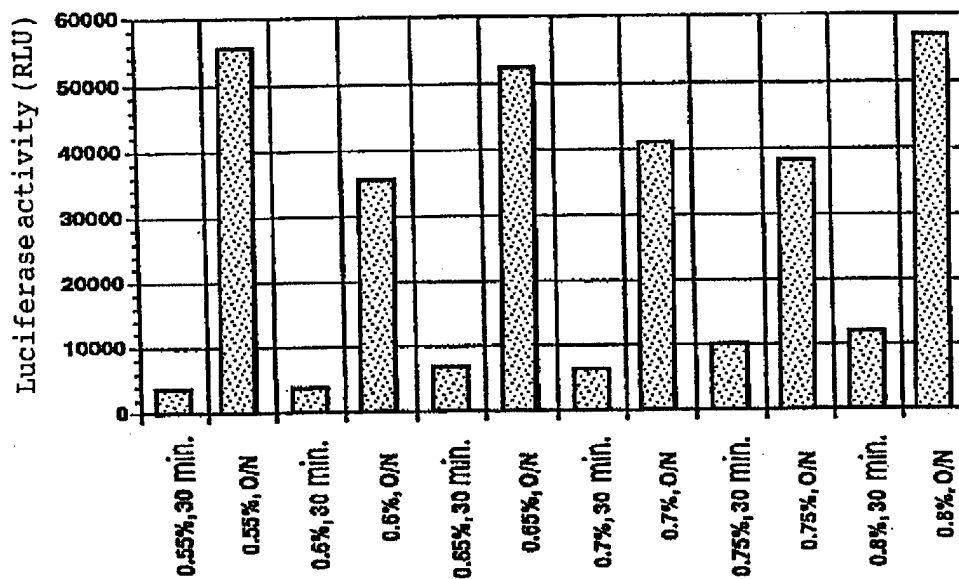


Fig. 9C

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 11 of 29

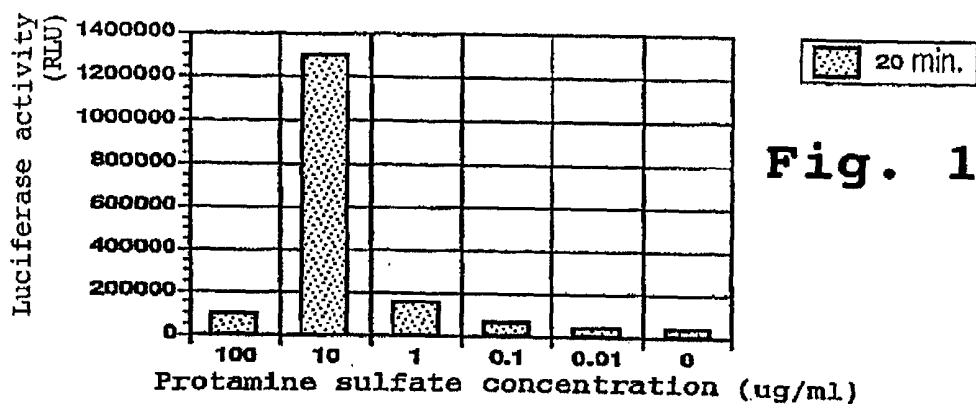


Fig. 10A-1

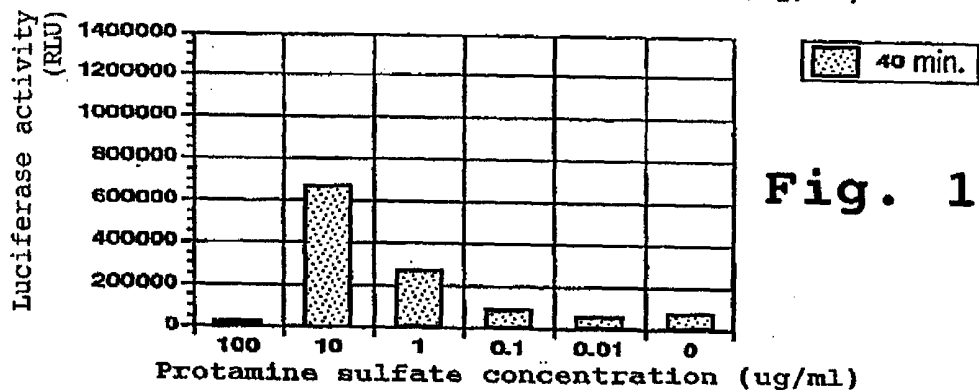


Fig. 10A-2

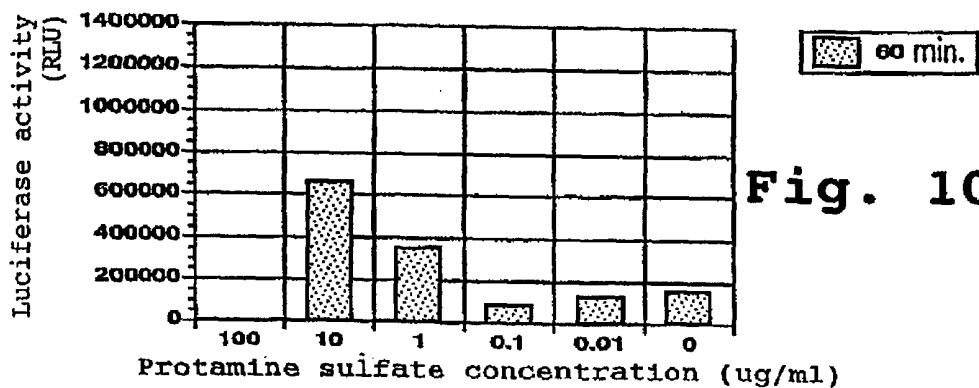


Fig. 10A-3

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 12 of 29

Effects of protamine sulfate on gene  
transfer by HVJ envelope vector

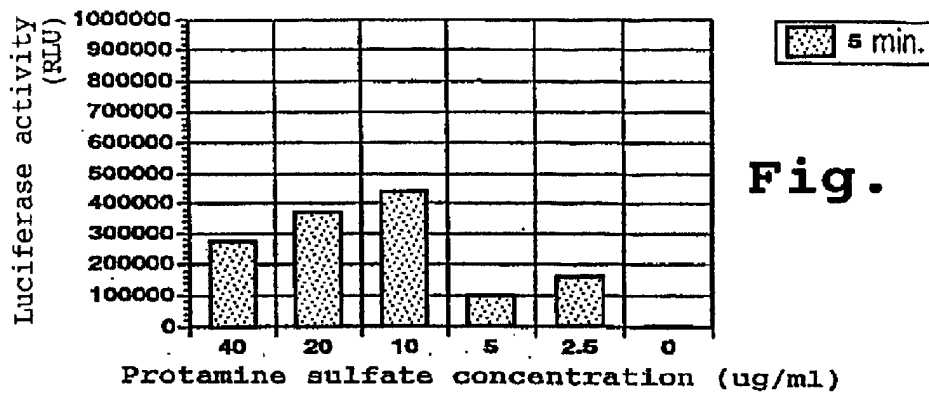


Fig. 10B-1

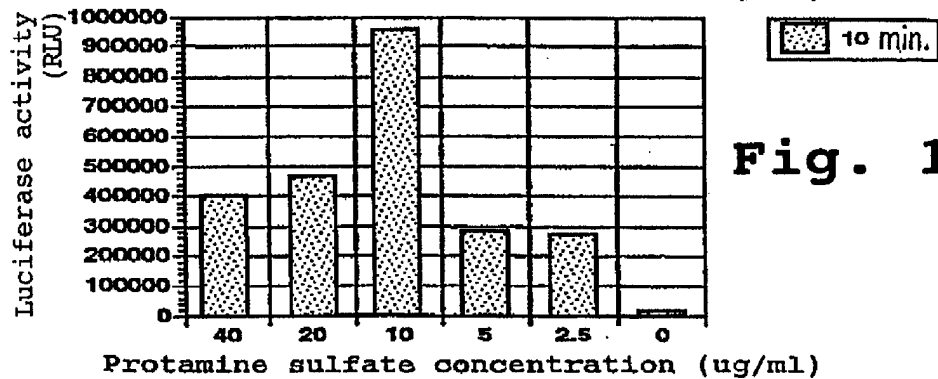


Fig. 10B-2

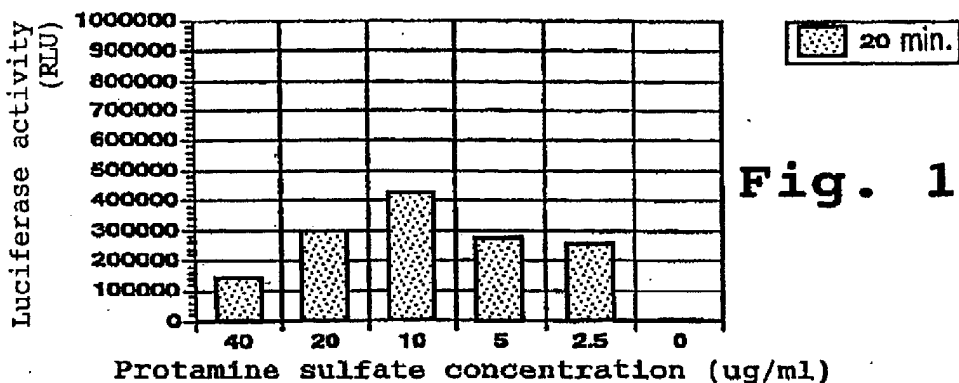


Fig. 10B-3



Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 13 of 29

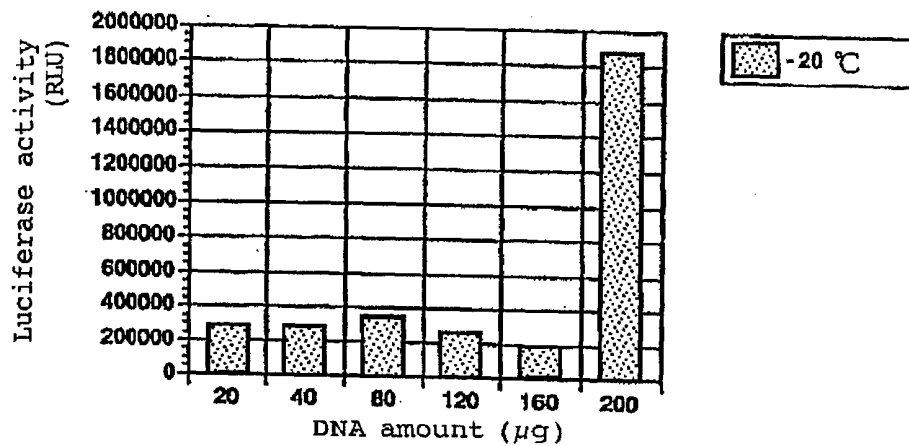


Fig. 11A-1

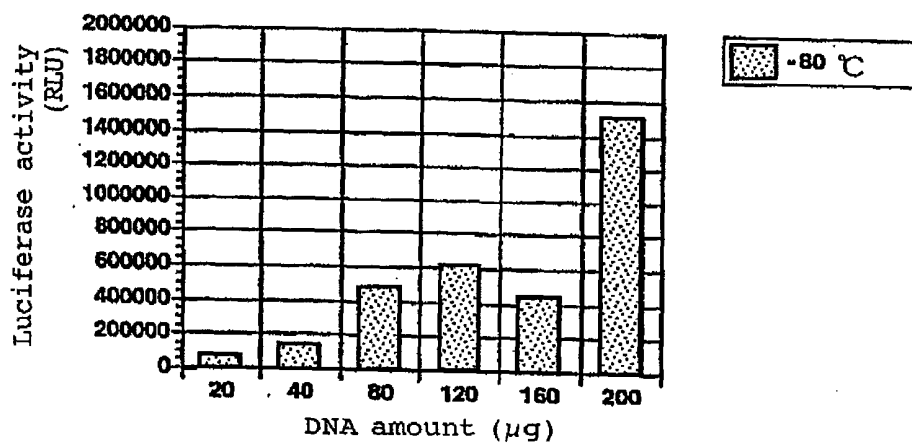
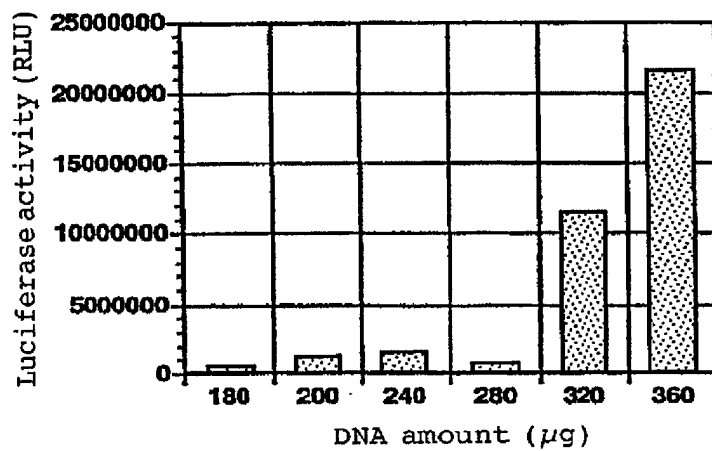


Fig. 11A-2

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 14 of 29



**Fig. 11B**

Title: VIRUS ENVELOPE VECTOR FOR GENE

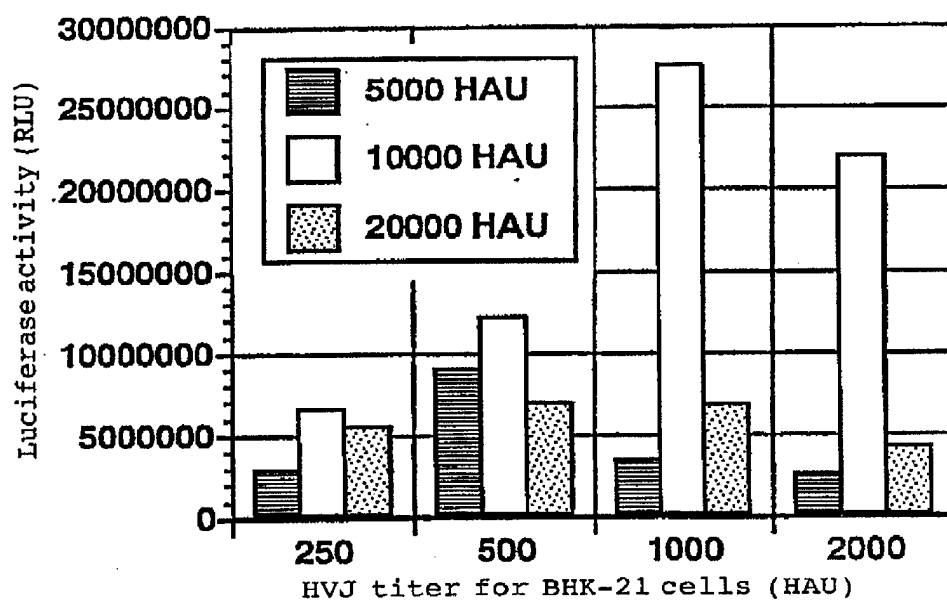
TRANSFER

Inventors: Yasufumi Kaneda

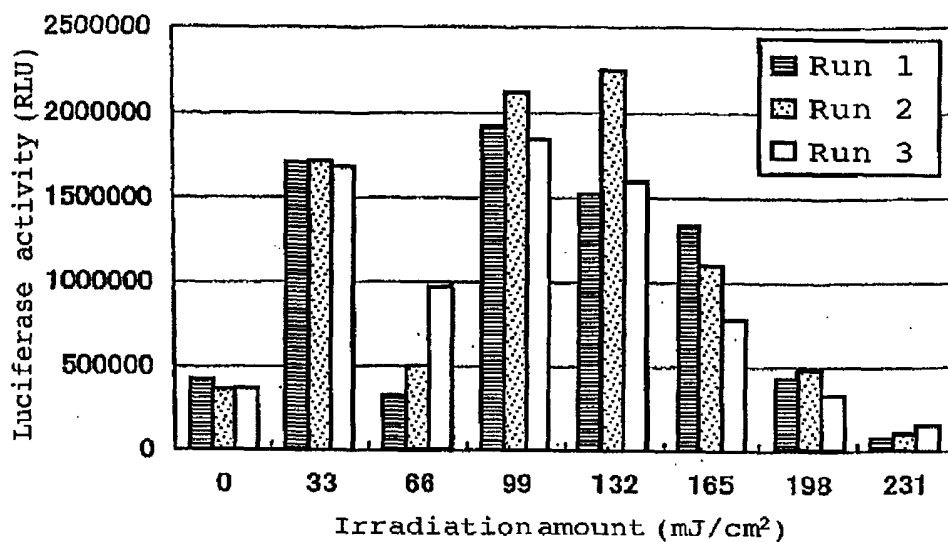
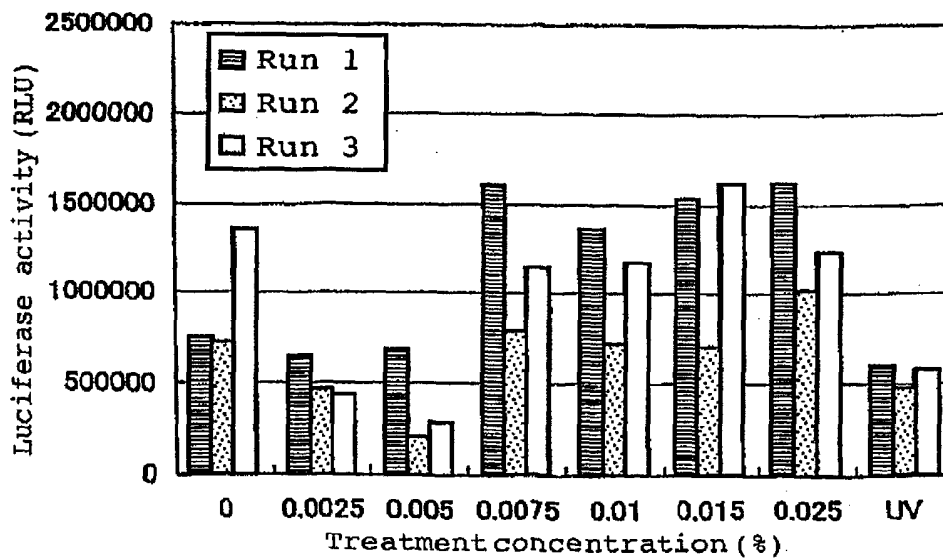
Attorney Docket No. 59150-8010

Customer No. 22918

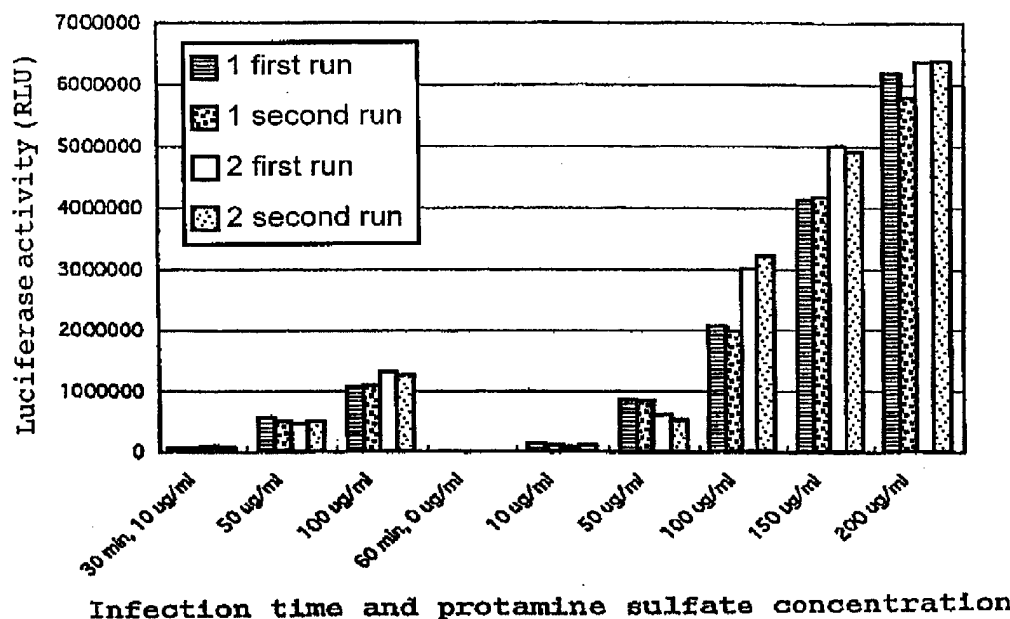
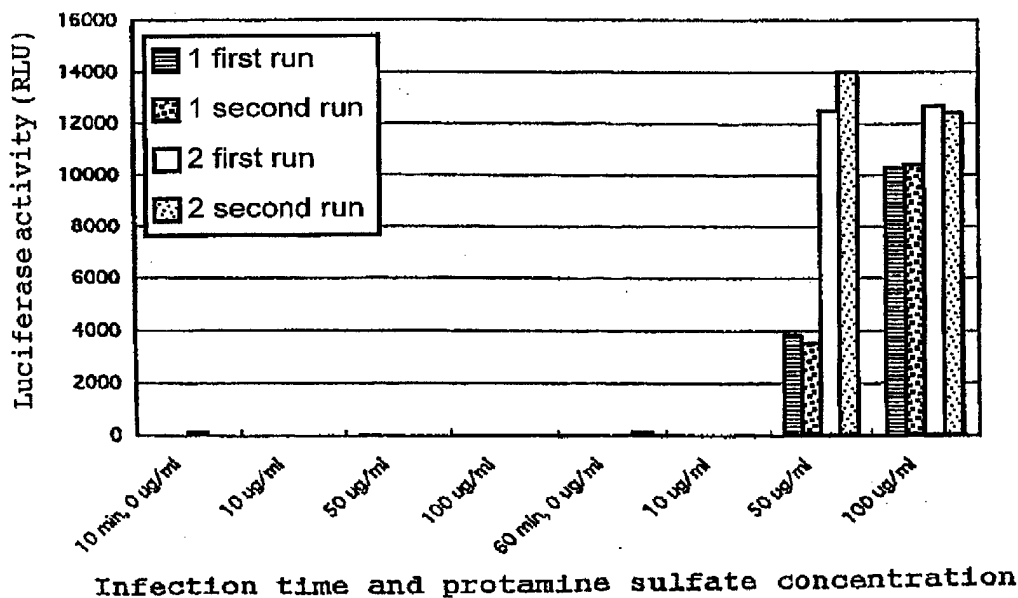
Sheet 15 of 29

**Fig. 12**

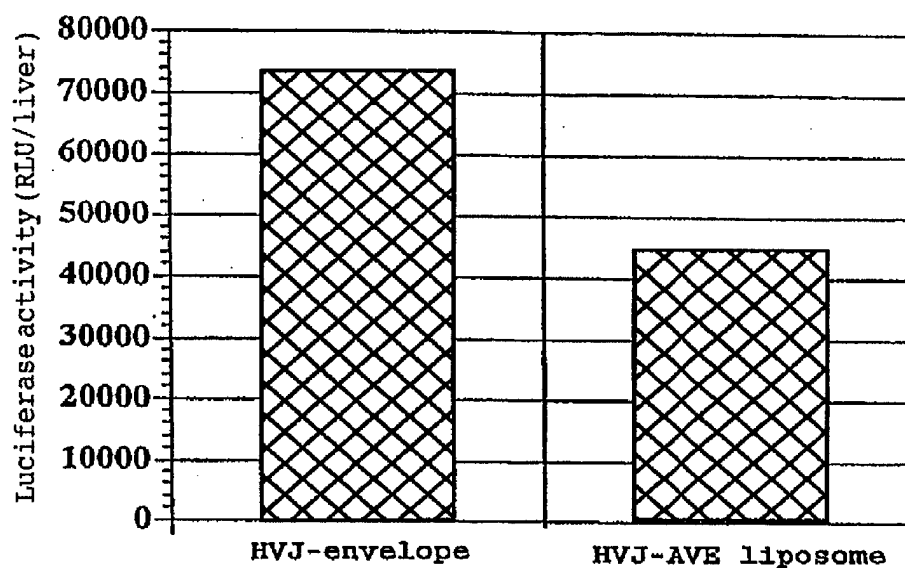
Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 16 of 29

**Fig. 13A****Fig. 13B**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 17 of 29

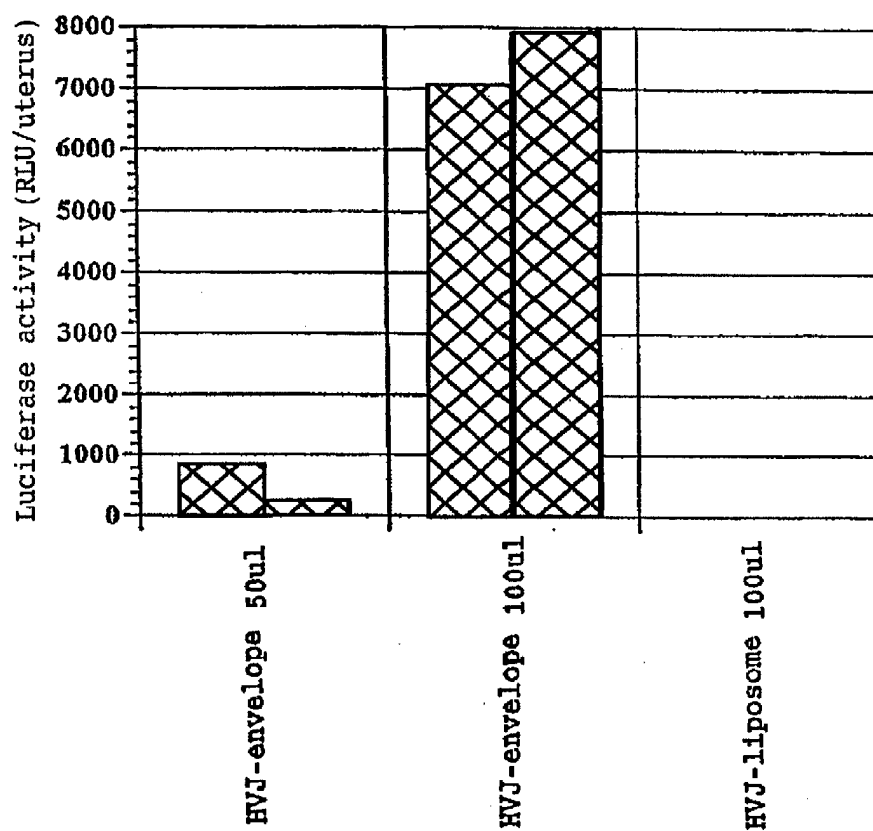
**Fig. 14****Fig. 15**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 18 of 29



**Fig. 16A**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 19 of 29



**Fig. 16B**

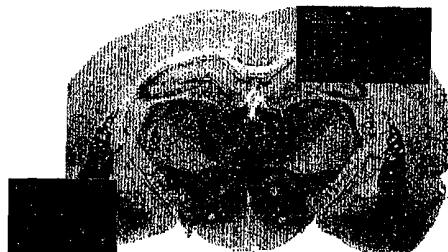
Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 20 of 29



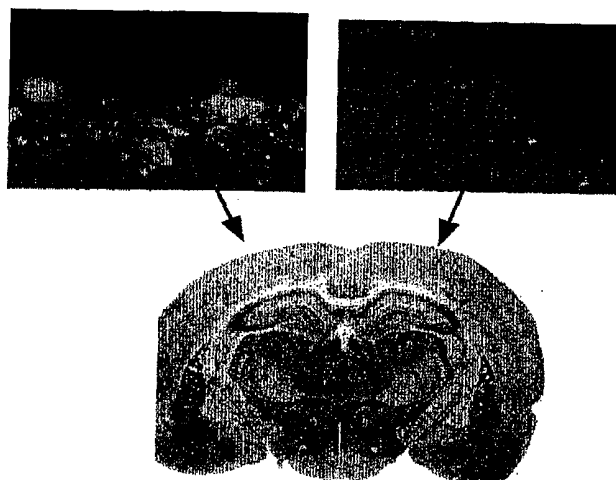
**Fig. 16C**



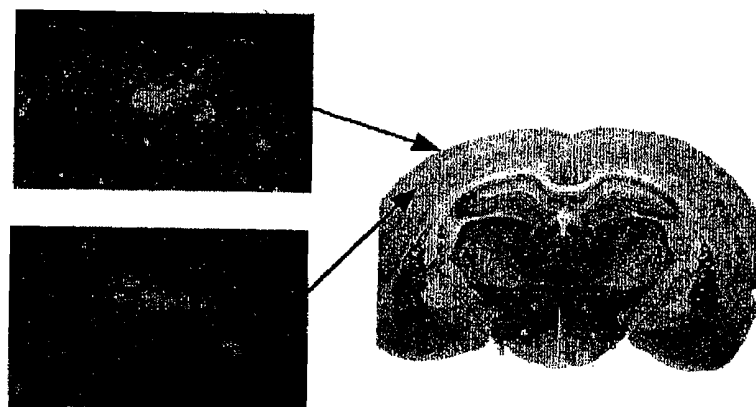
Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 21 of 29



**Fig. 16D-1**

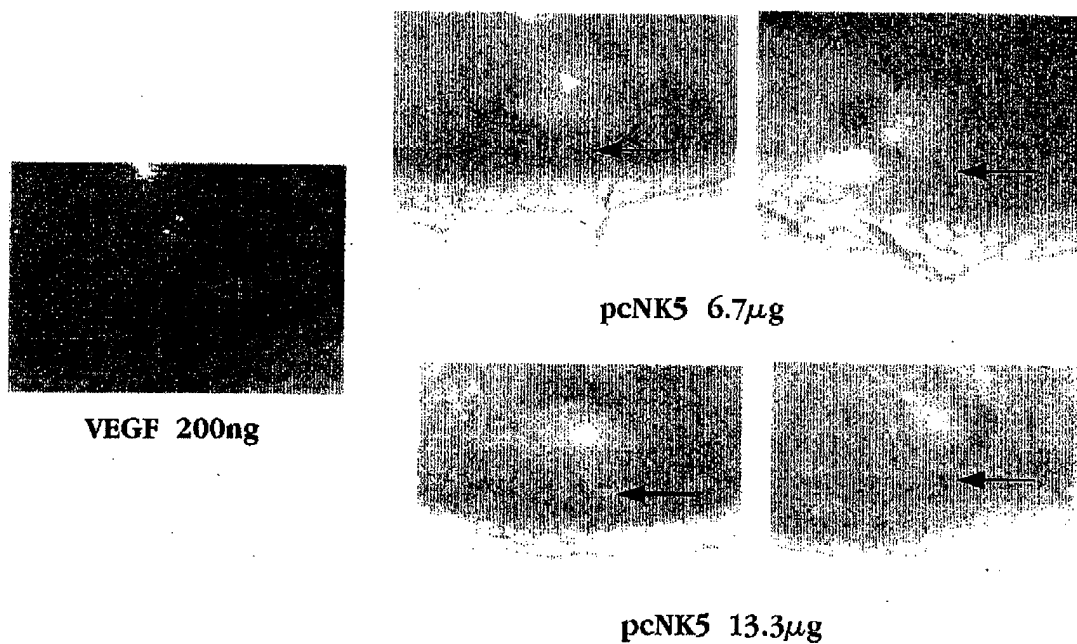


**Fig. 16D-2**



**Fig. 16D-3**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-3010  
Customer No. 22918 Sheet 22 of 29



**Fig. 16E**

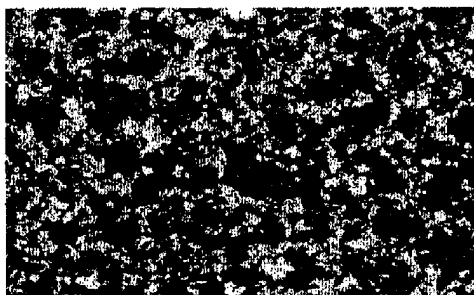
Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 23 of 29



**Fig. 16F**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 24 of 29

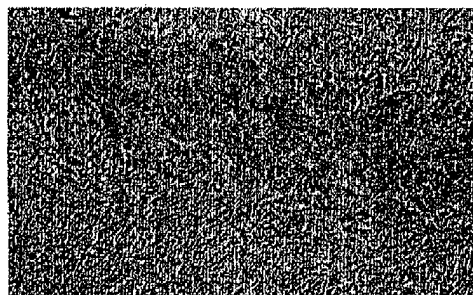
Fluorescenceimage



60 min

**Fig. 17A-1**

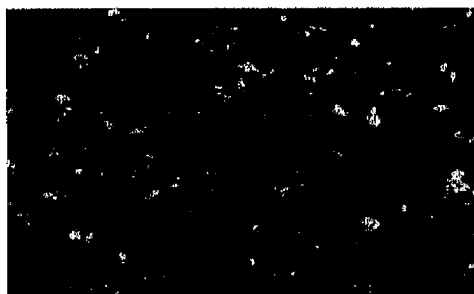
Phase-contrastimage



60 min

**Fig. 17A-2**

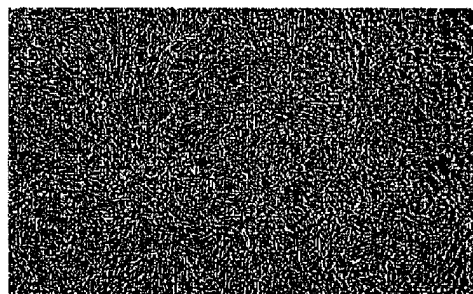
Fluorescenceimage



10 min

**Fig. 17B-1**

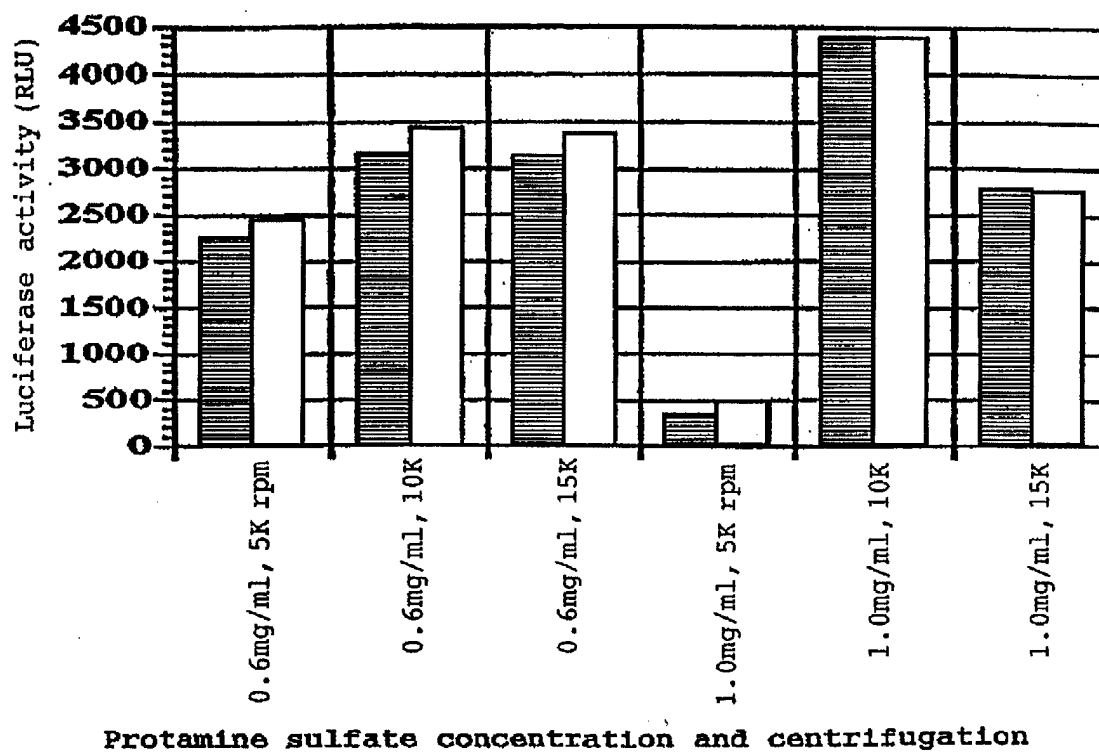
Phase-contrastimage



10 min

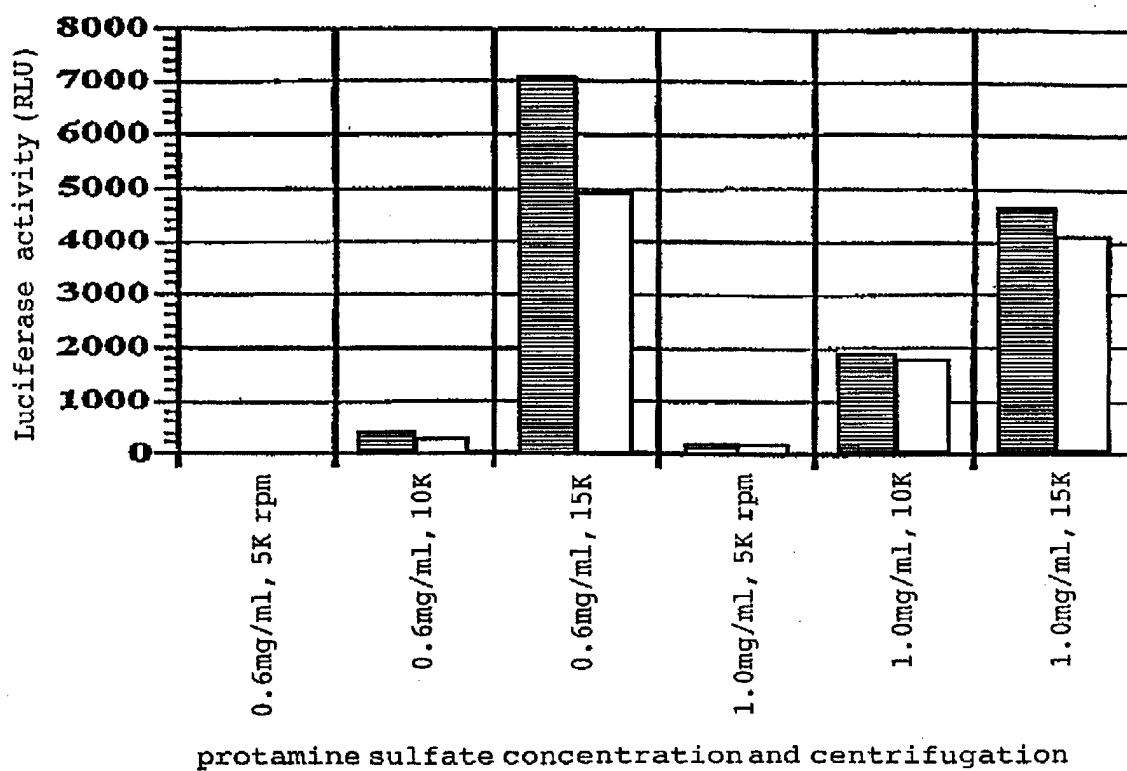
**Fig. 17B-2**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 25 of 29



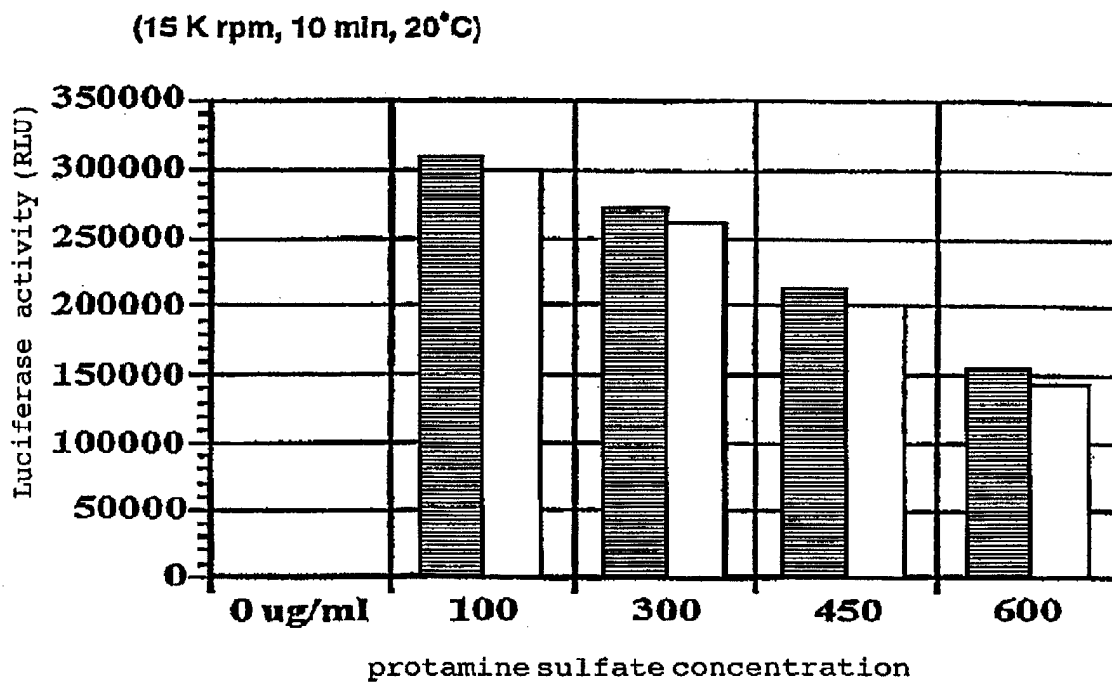
**Fig. 18A**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 26 of 29



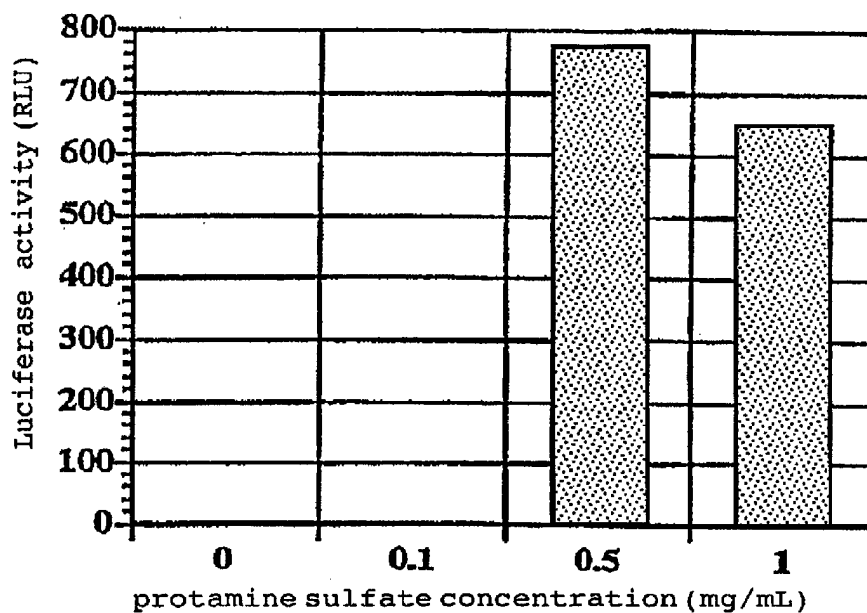
**Fig. 18B**

Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 27 of 29



**Fig. 18C**

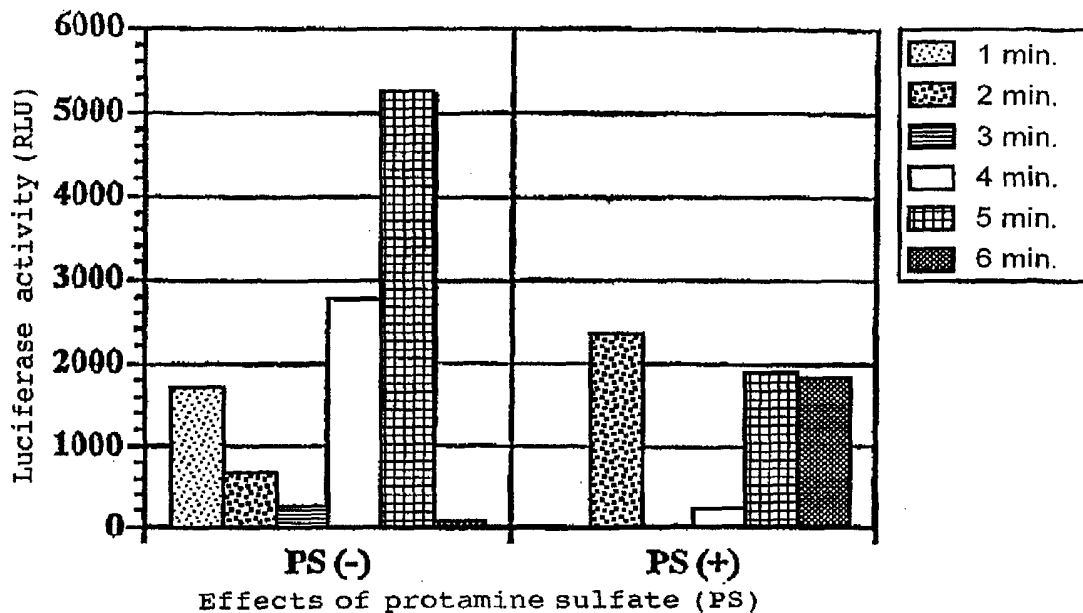
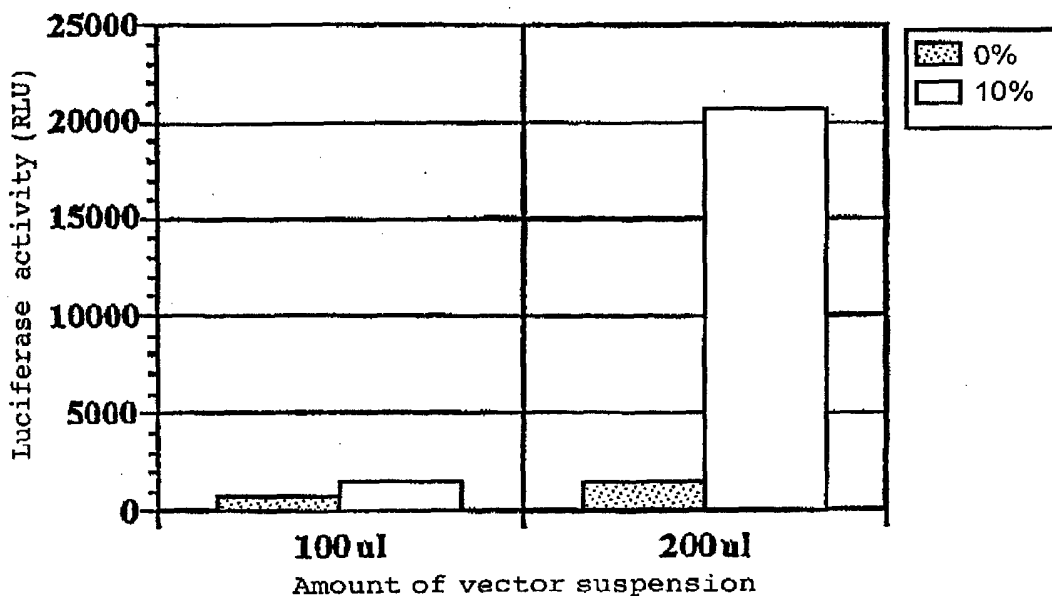
Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 28 of 29



**Fig. 19**



Title: VIRUS ENVELOPE VECTOR FOR GENE  
TRANSFER  
Inventors: Yasufumi Kaneda  
Attorney Docket No. 59150-8010  
Customer No. 22918 Sheet 29 of 29

**Fig. 20****Fig. 21**